



# Data Acquisition Through the Geospatial Products and Services Contract (GPSC)

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**GPSC COTR**

**ESRI, 2015**

# Overview

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- § Background Info
- § Acquisition Types
- § Planning/IGCE
- § Acquisition
- § Products/Results
- § Public Distribution



<http://www.geog.ucsb.edu/~jeff/115a/history/pigeonremotesensing.html>

# About GPSC

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§ Commercial Partnerships Team (NGTOC-CPT)

§ GPSC 2/3

§ A & E IDIQ Contract

§ Pool of contractors



# Project Types

## § Remote Sensing and GIS

§ Lidar

§ Ifsar

§ Bathymetry/Topobathy

§ Studies

§ Land Classification/Land Use/Change Detection

§ NHD

§ Orthoimagery

§ 3<sup>rd</sup> Party QA

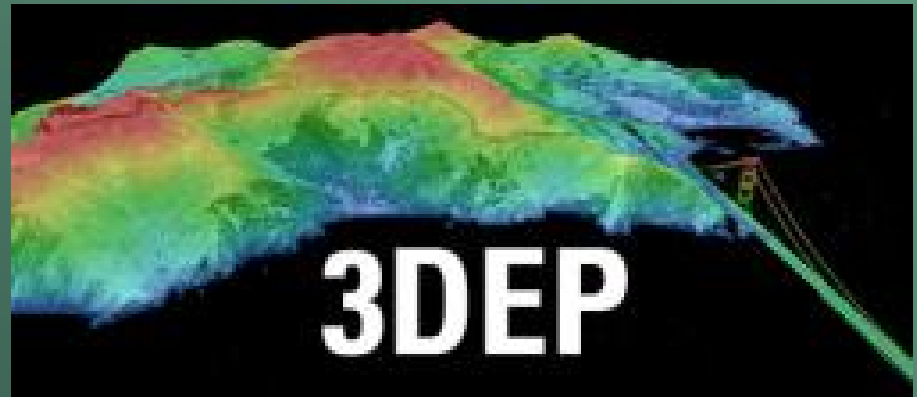
# Sensors



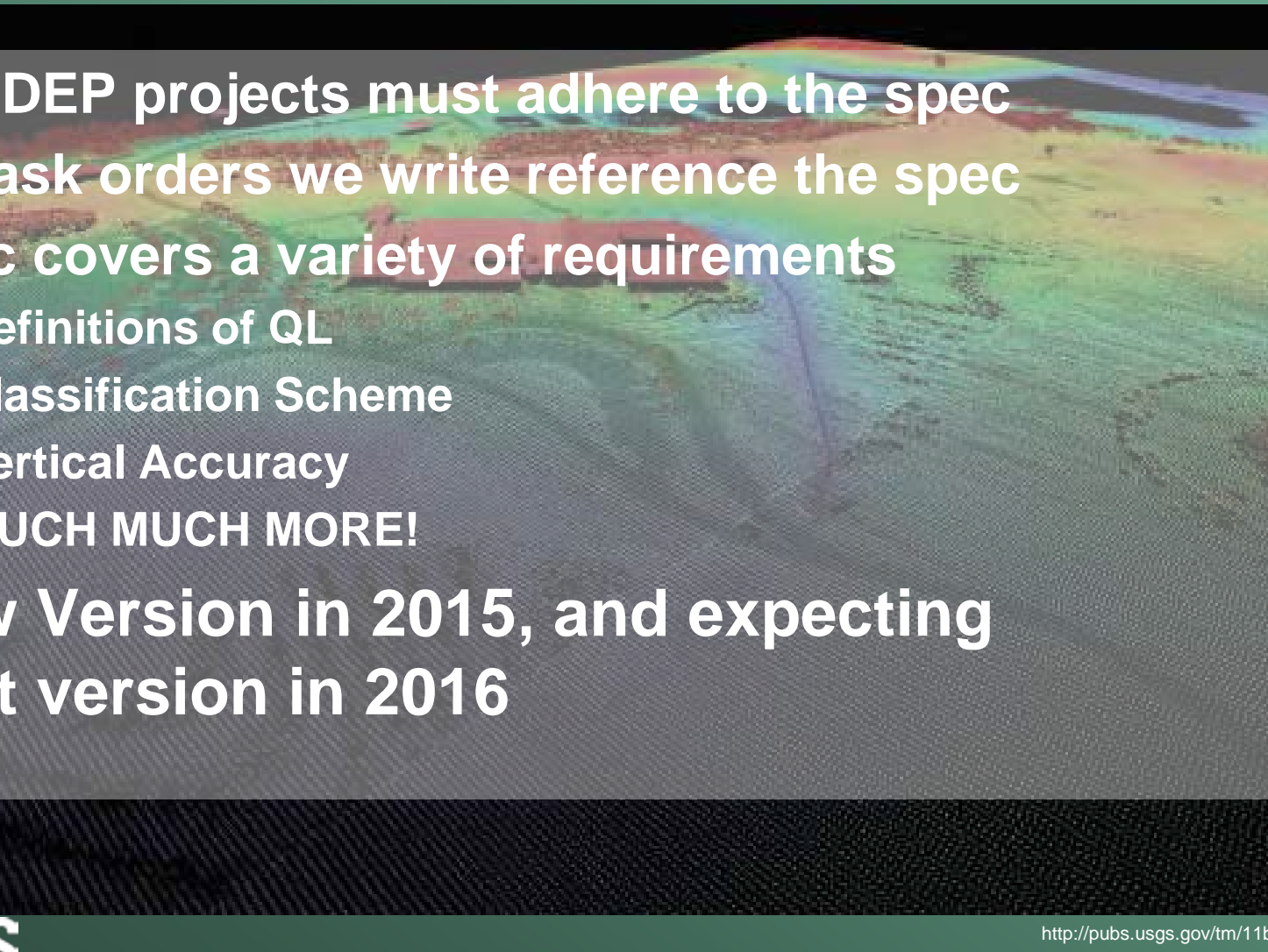
# 3D Elevation Program (3DEP)

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- § Based on the National Enhanced Elevation Assessment (NEEA)
- § Collection of high quality lidar (ifsar in Alaska)
  - § Minimum of QL 2 for contiguous US
- § Complete coverage of US and territories over an 8 year cycle



# Lidar Base Specification v 1.2

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- § All 3DEP projects must adhere to the spec
  - § All task orders we write reference the spec
  - § Spec covers a variety of requirements
    - § Definitions of QL
    - § Classification Scheme
    - § Vertical Accuracy
    - § MUCH MUCH MORE!
  - § New Version in 2015, and expecting next version in 2016

# Geospatial Liaisons/Agreements Office

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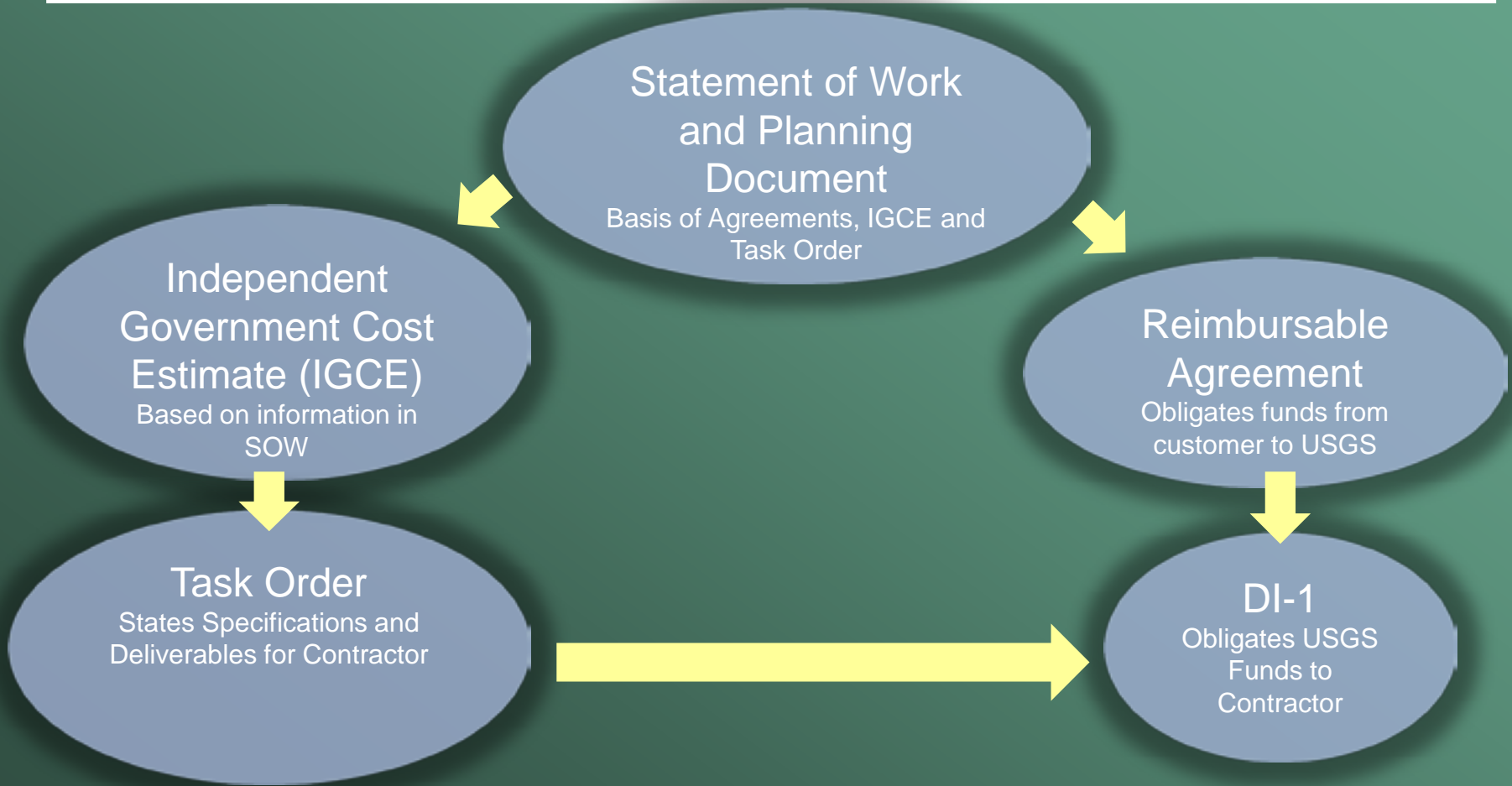
- § Assist funding partners in collaboration.
- § IAA – Interagency Agreement
- § Write the Joint Funding Agreement.
- § Special Considerations? Sensitive information? Data Restrictions?
- § QA





# Task Order Process

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# Who are our customers?

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- § USGS
- § Other Federal Agencies
  - § Forest Service
  - § NRCS
  - § Park Service
- § Tribes
- § States or Counties
- § Ultimately.... General Public



# Planning Phase

§ Gather Requirements  
Quality Level, Spatial  
Reference, Deliverables,  
Tile size, Ground Conditions  
(snow free/leaf off/normal water)  
Hydro Treatments  
Flattening/Enforcement

# Independent Government Cost Estimate (IGCE)

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## § Variables

- § Terrain, Quality Level, Specialized Products
- § Surface Models
- § Hydro Treatments
- § Breaklines/Contours
- § Building Footprints
- § Feature Extraction

# Flight Planning



**AeroPlan 10**

Computation: Accuracy Settings | Image Schemas | Hardware Configuration

Application: Point Density / In FOV - Optimization for Point Density with fixed FOV

Parameters:

- Field of View: 28.8 degrees
- Reference Height Min: 0 m | Max: 8 m
- Flying Height above min. Elevation (AGL): 1024 m
- Aircraft Speed over Ground: 100 kts
- Maximum Flying Height AGL: 2024 m
- Maximum Altitude MSL: 3024 m
- Altitude above sea level (MSL): 0 m | 2024 m
- Allow MRA:  Effective Pulse Rate: 200000 Hz | Auto adjust
- Scan Rate: 45.0 Hz
- Scan Pattern: X-range
- Auto Adjust for: Square Spacing | Access Along Track Fields: 1.00 m
- Max. Along Track Spacing: 1.00 m | Max. Across Track Spacing: 1.00 m
- Desired average point density: 8.00 pts/m<sup>2</sup>

Output:

Description	Computed	Target	Unit
Sensor ID	ALS70_1217173		
<b>Terrain and Aircraft</b>			
Reference Height	0		m
Flying Height AGL	1024		m
Altitude MSL	1024 / 2024		m-ft
Recommended Ground Speed (Kts)	100	100	kts
<b>Scanner</b>			
Field of View (FOV)	28.8	28.8	degrees
Maximum Scan Rate	56.6		Hz
Scan Rate Setting used (SR)	45.0		Hz
<b>Laser</b>			
Maximum Laser Pulse Rate	200000		Hz
Laser Pulse Rate used	200000		Hz
Multi Pulse in Air Mode	Disabled	Disabled	
Aircraft Speed Sensitivity	0.33		kts

Summary Metrics:

- Pulse rate: 200.0 kHz
- Laser power: 52%
- MRA:
- Field of View: 28.8°
- Scan pattern: X-range
- Ground speed: 100 Kts / 185 km/h
- Full swath width: 548 m / 0.44 mi
- Average point density: 8.0 pts/m<sup>2</sup>
- Track point density: 7.2 pts/m<sup>2</sup>
- Max. point spacing along track: 0.52 m / 0.33 ft
- Min. point spacing: 0.52 m / 0.33 ft
- Average point spacing: 0.4 m / 1.31 ft
- Altitude AMSL: 1024 m / 3361 ft
- Maximum range gate: 132 m / 433 ft
- Eye-safe range gate: 121 m / 397 ft
- Eye-safe terrain gate: 703 m / 2293 ft
- Flying height AGL: 1024 m / 3361 ft
- Terrain height: 0 m / 0 ft
- Maximum range gate: 1127 m / 3696 ft
- Sea level: 0 m / 0 ft

Data View - Flight Plan - [QL1]

Plannings and Flights | Plan-FrameDigital\_mks-s

List of AOIs:

Name	Type	AOI Area [...]	# Active Li...	# Inactive ...	# Active Ev...	# Inactive ...	Line Directi...	Active Line...	Inactive Li...	Min Heigh...	Max Heigh...	Min
0	AOI	26.2	27	0	54	0	178.6	208.67	0.00	1169	1753	
0	AOI	10.1	11	0	22	0	178.6	85.01	0.00	1264	1823	

# Task Order

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- § Identify a contractor
- § Include all required deliverables
- § Include specifications
  - § USGS Base Spec/ ASPRS Standards
- § Project AOI
- § Customer approval



# Negotiations and Award

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- § Contractor submits a technical and cost proposal
- § Negotiate LOE and schedule
- § CO - Task Order Award/Notice to Proceed



# Acquisition Phase

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## § Project Kickoff

## § Flight

### § Coordination with project team

### § Local contacts provide ground condition updates

#### § Weather

#### § Snow

#### § Controlled Burning

#### § Leaf-off

#### § Tidal conditions

### § USGS Coordination with Contractor and Customer



# Access Letter/Permitting

§ Requests property access for surveyors

§ Permitting is responsibility of the contractor



Water.usgs.gov



# Project Monitoring with TOMIS

§ Acquisition Updates

§ Monthly progress reports

**BOAA** TASK ORDER MANAGEMENT AND INFORMATION SYSTEM  
TOMIS (v2.0)  
Kathryn Yoder  
CCIR

Current Activity | Task Orders | Archive | Profile | Reports | Users

» Task Order Details  
GPSC II > Digital Aerial Solutions LLC > 2014 MSCIP 12 inch Stereo Orthoimagery

Deliverables | Progress Reports | Contract | Contractors | Details | Cost | Notes | Reviewers | Viewers

new deliverable

Deliverable Name [Percent Of Task Order]	Due Date	Date Submitted	Date Approved	Status
Lot 1 Kickoff meeting control acquisition procedures [10%]	12/31/2014	01/20/2015	—	⊕
Lot 3 Imagery Acquisition [55%]	01/31/2015	02/02/2015	—	⊕
Lot 4 Consisting of all required Imagery deliverables & Reports [25%]	04/30/2015	04/29/2015	—	⊕
Lot 2 Acquisition updates [10%]	12/31/2015	02/10/2015	—	⊕

Task order actions... ▾

# Pilot Project

- § 5 square miles
- § Variety
- § Unclassified point cloud, classified LAS in each of the NVA categories, corresponding hydroflattened DEMs.
- § In-House QA
- § Shared with the customer

Image Courtesy of Quantum Spatial

# QA Process

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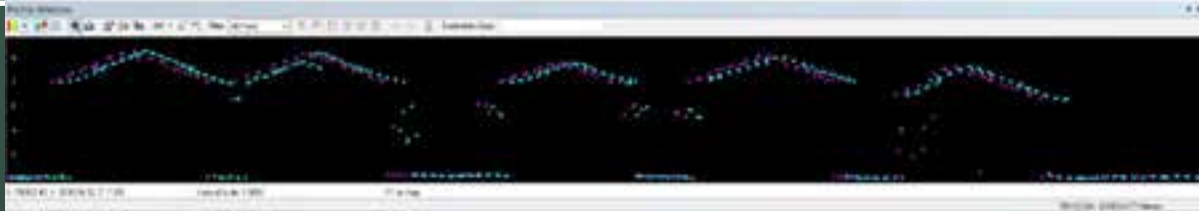
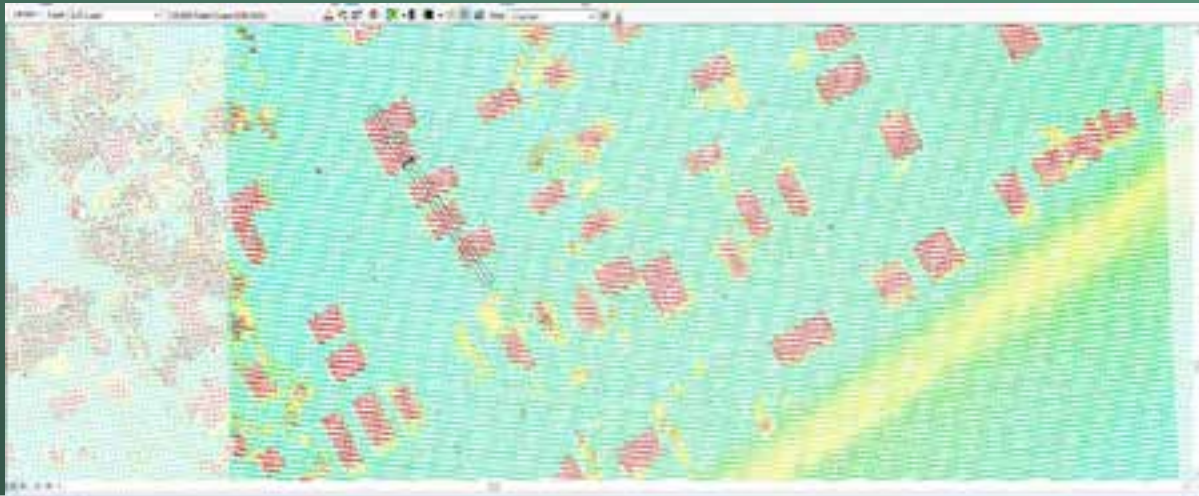
§ Ortho – 3<sup>rd</sup> Party Contracted

§ Lidar – In house USGS QA

§ Verify that data meets USGS Base Spec

§ Verify that data meets customer requirements

§ Automated Checks and Visual Review



# Evaluation

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§ Contractor Rating through TOMIS

§ CPARS



# Products and Results

- § Swath data
- § Classified Point Cloud
- § DTM/DEM
- § Breaklines, metadata, intensity image, contours
- § Other – building footprints, single-beam sonar, other supplemental datasets, additional classifications, DSM

Image Courtesy of Quantum Spatial

# Public Distribution - The National Map

**USGS Available Data for download**

The following themes and products are available in various formats for download in the reference area polygon you selected. Check one or more and click 'Next.'

Selected item type: **Index 24K**  
Selected item name: **Zapata Ranch**

- Maps
  - US Topo
  - Historical Topo Maps
- Data
  - Boundaries
  - Contours
  - Elevation DEM Products**
  - Elevation Source Data
  - Geographic Names
  - Hydrography (NHD) & Watersheds (WBD)
  - Land Cover
  - Map Indices
  - Orthoimagery
  - Structures
  - Transportation
  - Woodland Tint

If a checkbox is disabled, then the area you selected is too large. Define your area of interest with either a smaller bounding box, reference area, or current map extent. Click theme names to see theme descriptions.

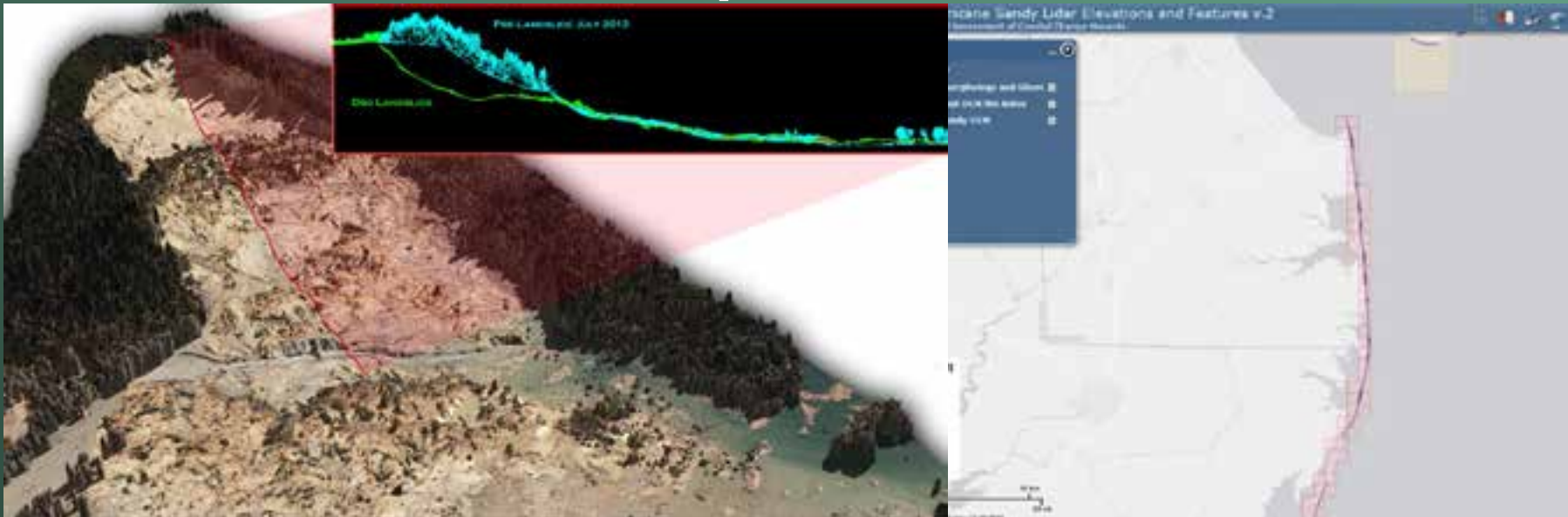
**Please do not select more than five themes for download at one time.** The length of the product inventory list is limited and you may not be able to see all available products when you choose too many themes. After adding products to the Cart, you can go through the selection box again if you still desire additional themes.

[Next](#)

# Scientific Applications

§ Forestry, Flood Analysis, Topographic Mapping, Environmental Studies, Planning, Emergency Response

§ Not ALL data enters public domain





# Thank you!

- § How GPSC acquired data supports 3DEP
- § Planning, Acquisition, QA, Accpetance
- § Public Distribution

§ Questions?

Image Courtesy of Quantum Spatial

# References

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- § US Geological Survey. (n.d.). *3D Elevation Program (3DEP)*. Retrieved from <http://nationalmap.gov/3DEP/>
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- § US Geological Survey. (n.d.). *The National Map*. Retrieved July 1st, 2015, from <http://nationalmap.gov/>

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